

NOAA's Integrated Ecosystem Assessment (IEA) Program

**Symposium on Kona's Marine Ecosystem: Past, Present and Future
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Integrated Ecosystem Assessment Outline

- **Overall IEA objective and process**
- **Regional Implementation**
 - A question of scale
 - A question of scope
 - Regional “schedule”
- **IEAs: A National and NOAA Priority**

Integrated Ecosystem Assessments

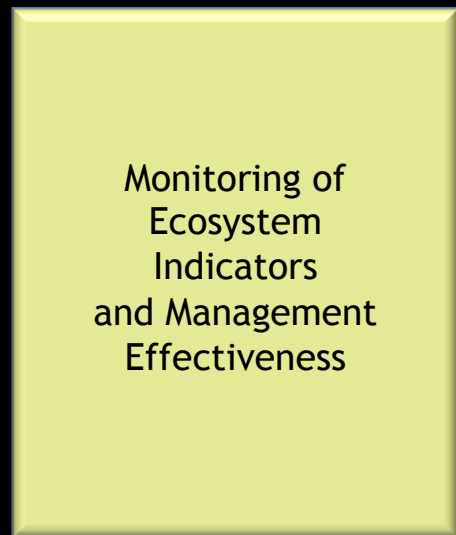
“A synthesis and quantitative analysis of information on relevant physical, chemical, ecological and human processes *in relation to specified ecosystem management objectives*”.

- A framework for organizing and synthesizing science to inform multi-scale, multi-sector EBM
- Objective: to provide evaluation of management strategies and advice, through:
 - comprehensive integration of diverse ecosystem information and best-available science
 - incorporating economic and social science data
 - Evaluating benefits and risks to social and ecological sectors posed by management actions
 - continuous performance evaluation and review

The IEA loop

(Levin et al. 2008, 2009)

*Adaptive
Management and
Monitoring*



*Implementation
of Management
Action*



Scoping

- Goals, objectives, and threats are identified and prioritized
- Scale, diversity, and relationships of different ecosystem components are laid out on the table
- A defining feature is stakeholder involvement, e.g.:
 - fisheries sectors
 - business & industry sectors
 - conservation groups
 - scientists
 - local, regional gov'ts

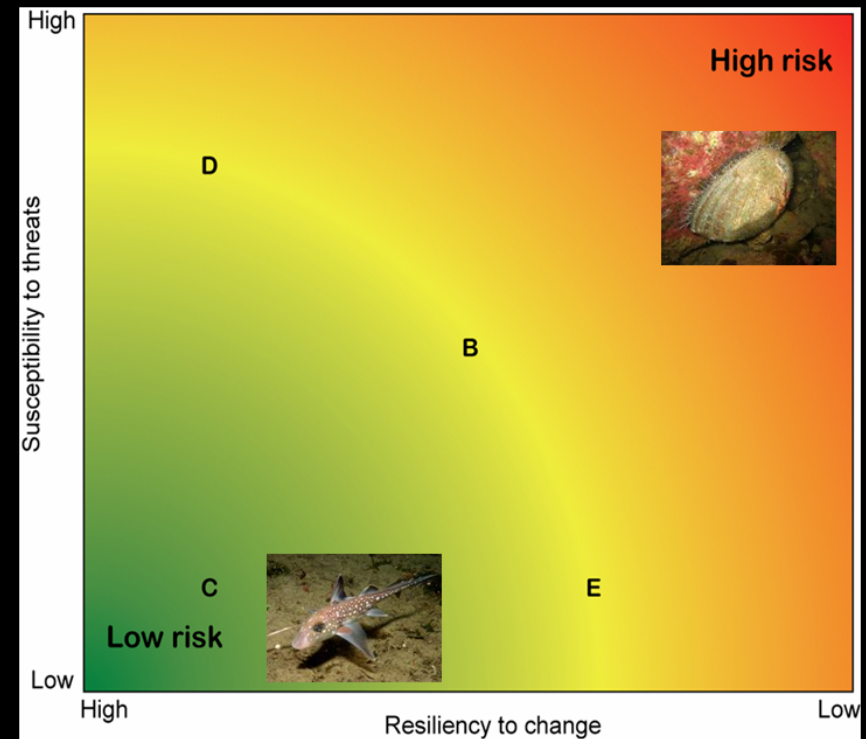
Indicators and targets

- Once goals and threats are scoped, you must select variables you'll measure to indicate ecosystem status, management performance
- There are any number of indicators that can be identified for a given ecosystem
- Key is to pick a SMALL SUITE of indicators that robustly track a broad range of attributes

Risk analysis

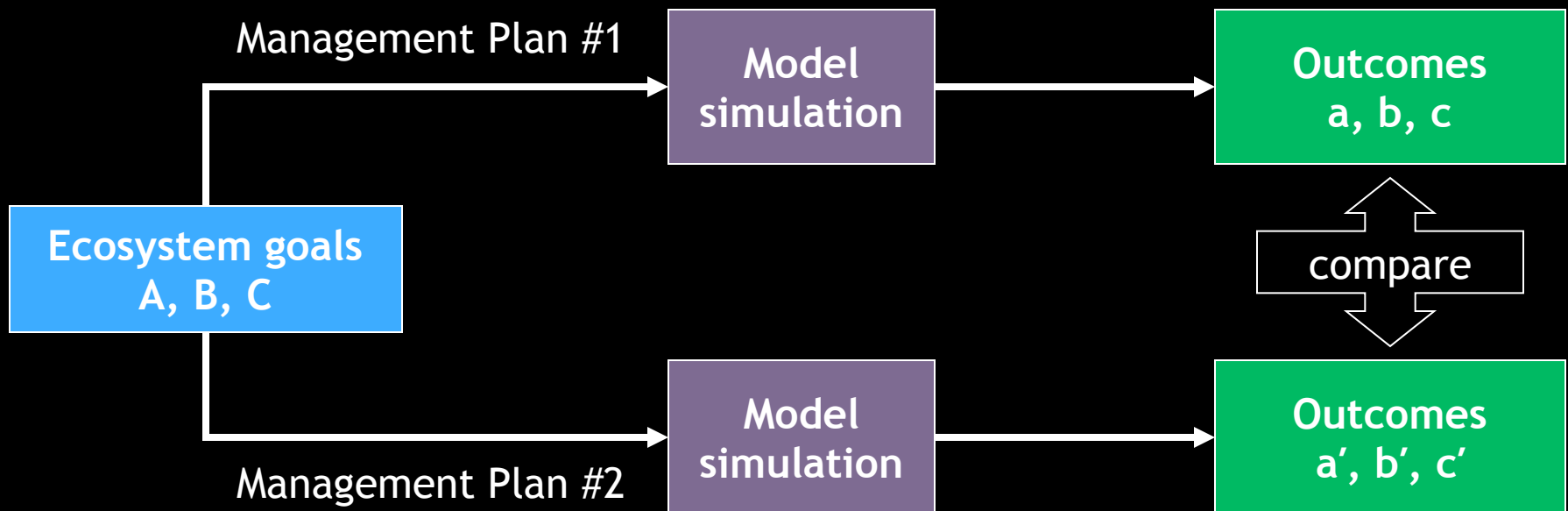
- As indicators are established, we analyze or judge their risk of reaching or remaining in an “undesirable state” due to natural or human threat

- Precedes integrated assessment of ecosystem, when all indicators are considered simultaneously

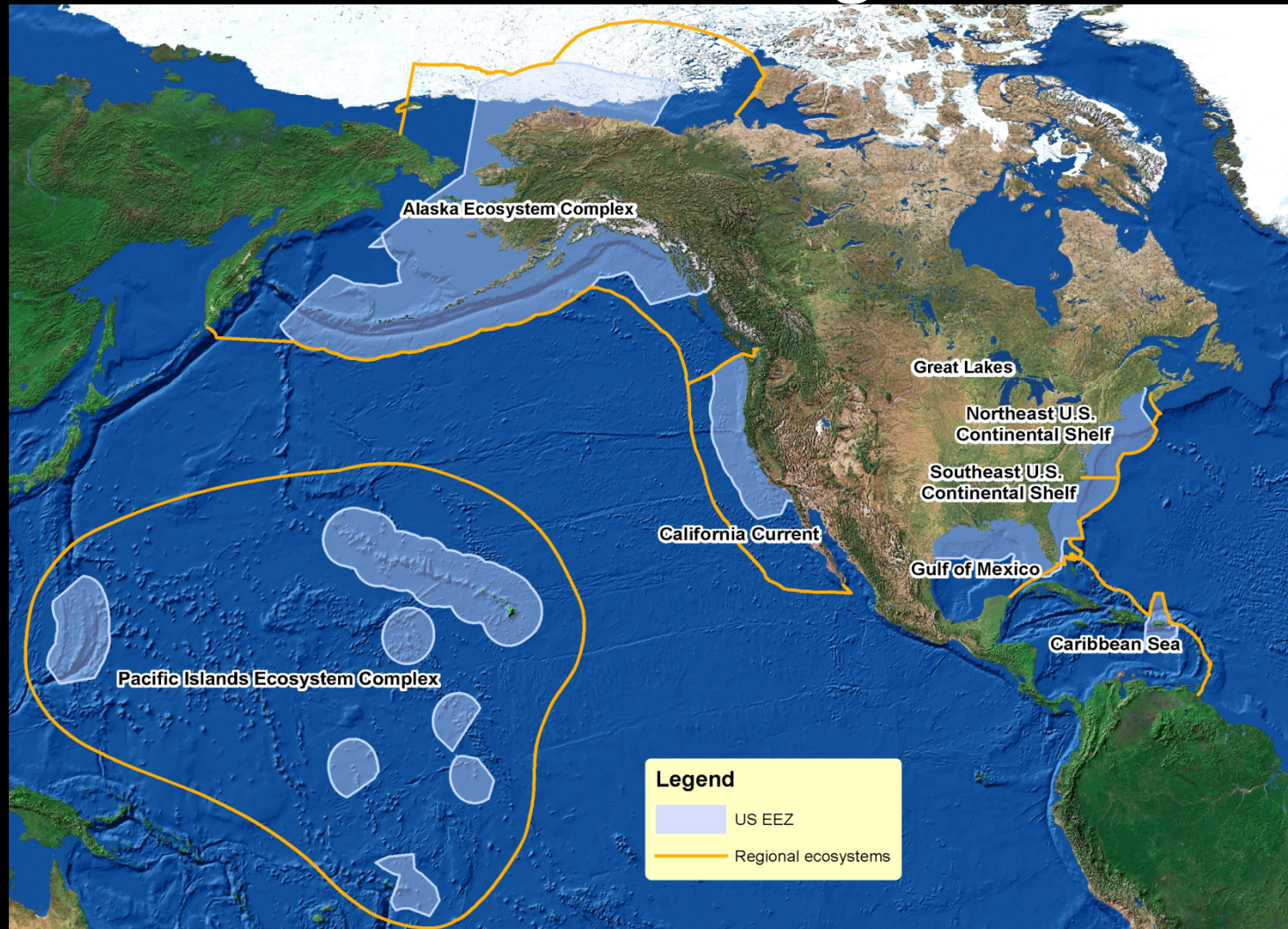


Management Strategy Evaluation (MSE)

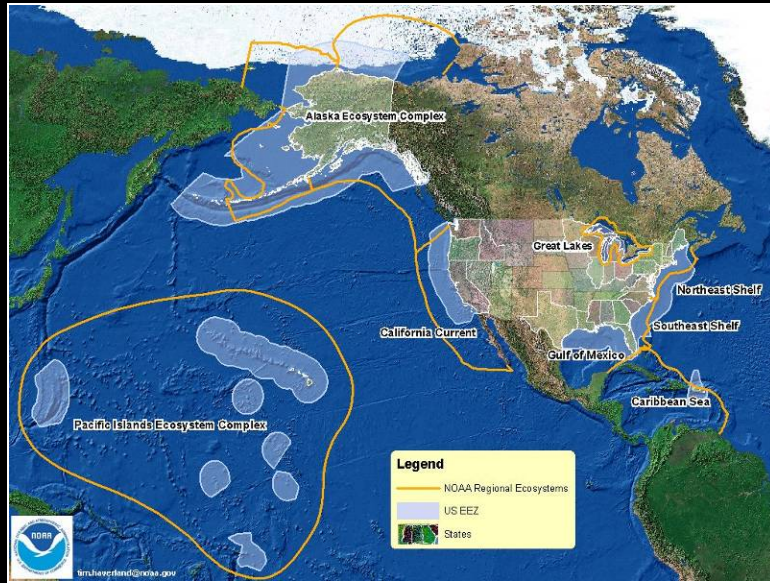
- comparing alternate management plans, often with a model
- management plans are evaluated based on their performance relative to pre-set management targets and decision rules
- facilitates analysis of trade-offs among plans with respect to goals, sectors, natural resources, etc.



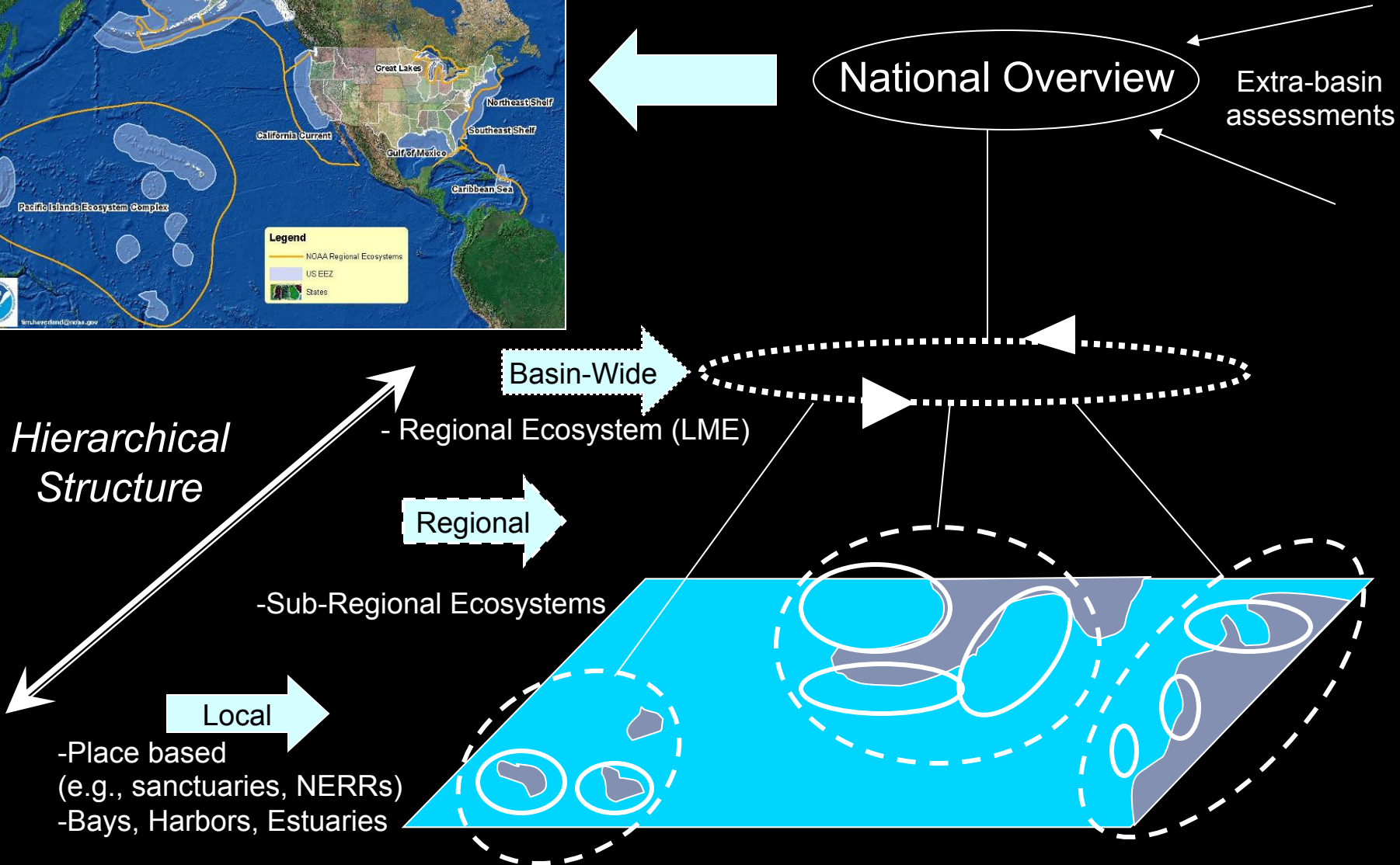
NOAA's Regional Ecosystems – US LMEs = NOAA's IEA regions



IEAs – A Question of Scale



Assessing the Status of Ocean and Coastal Ecosystems of the United States



IEAs – A question of scope



NOAA's Proposed IEA Schedule:

- California Current
- Gulf of Mexico
- Northeast Shelf
- Alaska Complex
- Pacific Islands

Followed by:

- Caribbean Sea
- Southeast Shelf
- Great Lakes



Order determined by series of criteria:

- regional NOAA capabilities to support IEA development
- emerging regional needs
- strength of NOAA statutory missions
- broad-based external partnerships (states, academia, regional govts., federal agencies)

IEAs: A National and NOAA Priority

- July 2010: New National Ocean Policy:
 - Final recommendations provide 9, not mutually exclusive priority objectives.
 - Three that have particular relevance to NOAA's development and implementation of IEAs:
 - Ecosystem-based Management
 - Inform Decisions and Improve Understanding
 - Coastal and Marine Spatial Planning

IEAs: A National and NOAA Priority

- *Ecosystem-based Management*: adopt EBM as foundational principle for comprehensive management of the ocean, our coasts, and the Great Lakes.
- *Inform Decisions and Improve Understanding*: Increase knowledge to continually inform and improve management and policy decisions and the capacity to respond to change and challenges...
 - Plans for this priority should address: Requirements for routine Integrated Ecosystem Assessments and forecasts including impacts related to climate change, to address vulnerability, risks and resiliency, and inform tradeoffs and priority-setting.
- *Coastal and Marine Spatial Planning*: Implement comprehensive, integrated, ecosystem-based coastal and marine spatial planning and management in the US.
 - ...efforts would identify and fill key national information needs , and develop CMSP decision-support tools, forecasting, and routine integrated ecosystem assessments

IEAs: A National and NOAA Priority

December 2010: NOAA's Next Generation Strategic Plan

- Long-term Goal: Healthy Oceans; Objective: Improved understanding of ecosystems to inform resource management decisions:
 - Over the next 5 years “Evidences of Progress” toward this objective includes: Increased use of ecosystem information (including [Integrated Ecosystem Assessments](#)) in natural resource decisions in marine, estuarine, Great Lake, and riverine systems.

December 2010: NOAA's Annual Guidance Memorandum: Implementing the NGSP:

- AGM Focus: Promote ecosystem-based management by implementing the NOP:
 - To provide the scientific basis for EBM, NOAA must create a science framework that improves our understanding of ecosystems and of interactions between human and natural systems on a regional and international scale. One of several efforts underway is the development of regional [Integrated Ecosystem Assessments](#).

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For More Information:

<http://www.st.nmfs.noaa.gov/iea/index.html>